Idaho Cleanup Project – Spent Nuclear Fuel Management and Disposition Special Nuclear Materials Disposition

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Materials Disposition Project Mission

- Disposition all ICP-owned Special Nuclear Material by September 30, 2009.
- Safely manage all Spent Nuclear Fuel and SNF facilities at INTEC and Ft. St.Vrain, CO.
- Achieve Idaho Settlement Agreement SNF milestones.
- Safely manage high-level waste calcine.
- Achieve Idaho Settlement Agreement and RCRA Site Treatment Plan calcine milestones.

ICP Special Nuclear Materials (SNM)

- In 2005, INL SNM responsibility was divided between NE and ICP.
- ICP-owned items were listed in the ICP contract and a September 30, 2009 milestone for disposition was set.
- Through July 2007, 430 of 641 items have been dispositioned:
  - Transferred to another program for use.
  - Transported to another site for recycle.
  - Disposed as waste following waste determination and security termination.

SNM Continuing Work Scope

- Largest population of SNM is unirradiated fuel. It is being recycled. Shipments to Y-12 will continue in FY 2008.
- 40 Shippingport ULWBR units will be disposed as low-level waste at NTS. Shipments will occur in FY 2008.
- ULWBR seed module may be disposed at RWMC.
- Characterization and disposition of remaining items will be completed before 9/09.

Post-2009 Tasks

- There are a few unirradiated reactor fuel assemblies stored with SNF.
- More unirradiated assemblies will be received with Foreign and Domestic Research Reactor (F/DRR) SNF receipts.
- The management and eventual disposition of this SNM is post-2012 work scope.
- ICP has no technology needs related to SNM.

ICP manages legacy SNF from DOE, DOD, F/DRR and commercial reactors.

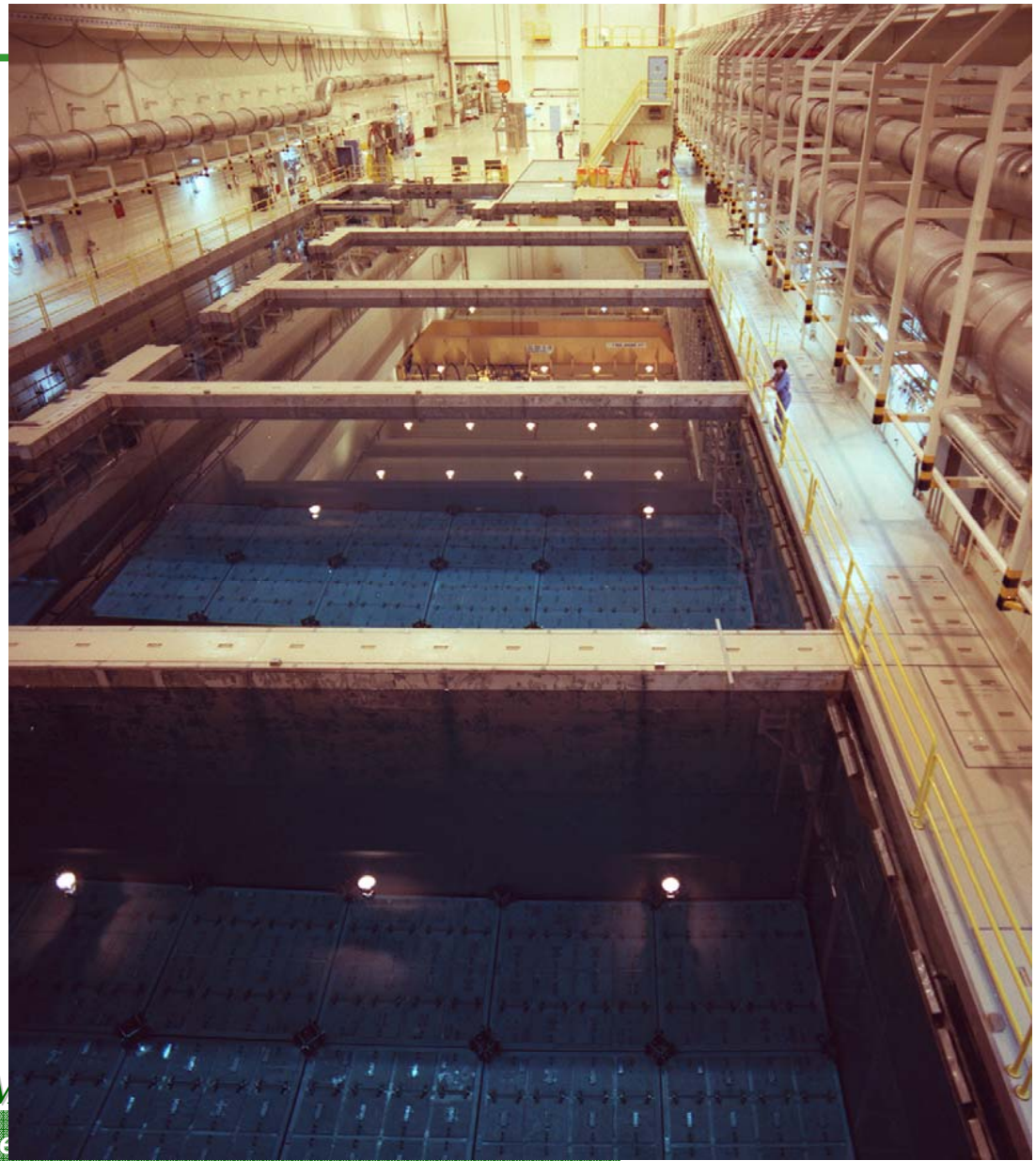
- 220 types including aluminum-clad, stainless steel-clad and zirconium-clad
- Ranging in size from ½ lb to 2 tons
- Currently ~260 MTHM, maximum expected storage ~290 MTHM
- Stored in wet basin, above ground dry-storage facilities, underground vaults, casks and rail cars.

SNF Storage at Ft. Saint Vrain, CO

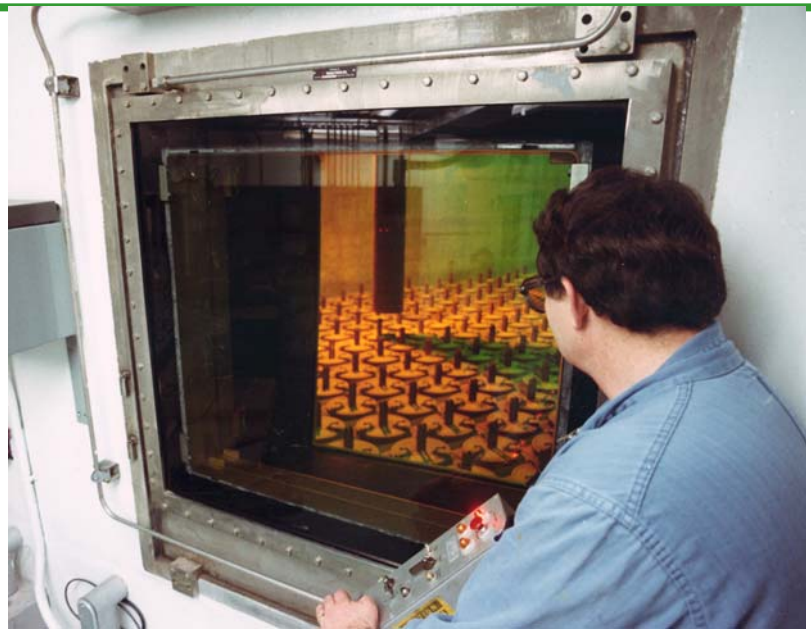
- Located 35 miles north of Denver, CO.
- Stores 14.7 MTHM of spent fuel from the Ft. St. Vrain Nuclear Generating Station.
- Fuel is stored dry.
- The Facility is NRC licensed.
  - DOE-Idaho is the licensee.

- Idaho Cleanup Project contractor personnel live in Colorado and manage the facility along with a subcontracted security force.
- There is an agreement with the State of Colorado for removal of the fuel by 2035.
- The Idaho Settlement Agreement allows SNF shipments from CO to the INL for repackaging when a repository or interim storage site outside of Idaho is open and is accepting SNF from Idaho.

CPP-666
Fuel Storage Basin



Spent Fuel Dry Storage



Current SNF Work Scope

- Maintain all SNF storage facilities including renewal of NRC licenses.
- Transfer all ICP-owned SNF from CPP-666 basin to CPP-603 dry storage facility by September 2009.
- Transfer all Navy-owned SNF from CPP-666 to Naval Reactor Facility on INL Site by September 2012.
- Accept up to 31 transfers/yr of ATR SNF into CPP-666 through 2010.
- Manage NE-owned SNF stored in CPP-666.
- Receive and store Foreign and Domestic Research Reactor SNF, as requested.
- Support RW's efforts to license Yucca Mt.
- Continue critical decision process to provide the INL Site with the capability to characterize SNF, package SNF in standard canisters, store canistered SNF and load-out canistered SNF for transport to the repository.
- If project is approved, implement 1995 EIS ROD to consolidate SNF by type (SRS/INL SNF Exchange).

SNF Research Needs - Immediate

- Portable method of confirming uranium content of spent nuclear fuel received at INTEC.
  - S&S requirement to confirm SNM.
  - ICP operates under an exemption.
  - BEA has a system in validation. Specific to TRIGA.
  - Best time and place to confirm content is during pre-load inspection.
    - Portable
    - Capable of operation is varied small spaces
    - Applicable to all fuel types

SNF Research Needs – Mid-term

- NRC licensed facility aging studies.
- Similar review of life extension for INTEC storage facilities.
- Technology to effectively dry and to confirm dryness of SNF contained in a basket/container.
- Technology to drill into cans and provide internal inspection in high radiation fields.

SNF Research Needs – Post-2012

Use of standard canisters may reduce repository-required characterization, but efficient, non-destructive characterization methods to support repository acceptance may still be needed.

- ICP SNF includes research fuels with incomplete pedigrees.
- ICP SNF includes very disrupted fuel (oatmeal).
- ICP SNF includes fuel parts and pieces.

SNF Research Needs – Post-2012 (cont.)

- Support to packaging/storage facility design
  - Improved mechanical systems – maintenance
  - Enhanced process flow models
  - Enhanced high-field radiological monitoring
  - Comfortable PPE
  - Reduced waste generation
  - D&D'able materials

SNF Research – Nice to have

- Continued improvements in radiation control.
- Continued improvements in crane design - manipulator dexterity, maintenance access.
- Continued improvements in transport tracking.